



OFFICE MEMORANDUM

DATE: July 7, 1997

TO: District Engineers
District Field Engineers
District Construction Engineers
Resident/Project Engineers
TSC Managers

FROM: James D. Culp
Engineer of Construction/Materials &
Technology Division

SUBJECT: CONSTRUCTION INSTRUCTIONAL MEMORANDUM 1997-5
Erection of Cantilever and Truss Supported Signs, Tower Lighting,
and Light Standards (Amendment to CIM 1994-11)

The proper installation and tightening of the anchor bolts and the requirement for following specific erection procedures are critical for ensuring the long term performance of sign support and light standard structures. This CIM is being issued as result of a continuing problem with contractors being allowed to exercise improper procedures in the erection of cantilever sign structures.

Prior to issuance of the 1996 Standard Specifications for Construction, the anchor bolt installation and tightening requirements and the cantilever sign support erection procedures were governed by the 'Special Provision for Sign Support and Light Standard Anchor Bolts' and the 'Special Provision for Cantilever Sign Support Erection', respectively. The exact language of these Special Provisions has been incorporated into the 1996 Standard Specifications for Construction. The requirements and procedures relative to the installation and erection of sign supports and light standards can be found in Division 8, while the anchor bolt material requirements for those structures can be found in Division 9.

Subsection 810.03.I of the 1996 Standard Specifications for Construction is very specific concerning the erection sequence required for cantilever sign support structures. The specifications require that the cantilever upright be

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erected first, without the cantilever arm and or signs attached, and the anchor bolts tightened according to Subsection 810.03.K.2. After the anchor bolts are tightened, the arm bracket and then the sign are attached in sequence in accordance with the specification. The anchor bolts are then checked again for tightness according to Subsection 810.03.K.2.e.

Any sequence of erection where the arm bracket is attached to the cantilever upright prior to proper anchor bolt tightening is not allowed. Erecting the arm bracket or arm bracket and sign before proper anchor bolt tightening will cause anchor bolt pretensioning which prevents proper snugging of both the top and leveling nuts. The use of a crane to lift and hold a prematurely erected arm bracket, while attempting to tighten the anchor bolts causes an undetermined preload on the anchor bolt group. A condition of “no load” on the anchor bolt group is required to effectively tighten the anchor bolts to the desired tension. This bolt tightening requirement at a “no load” condition can only be accomplished by erecting the cantilever upright without the arm bracket attached.

Arm brackets on improperly erected cantilever structures must be removed and the anchor bolts loosened and retightened according to the specifications. Once the anchor bolts are properly tightened, the arm bracket can be reerected on the upright using new high strength bolts. The new bolts attaching the arm bracket to the upright should be tightened according to the specification. The sign panel can be mounted on the arm bracket after proper installation of the arm bracket.

In an effort to avoid a continuation of problems relative to the proper installation and erection of any sign supports or light standards, we are requesting that Resident/Project Engineers/TSC Managers and their staffs read and become familiar with the appropriate specifications referenced in this CIM. As instructed in CIM 1994-11, we recommend that Resident/Project Engineers/TSC Managers contact Steve Cook, of the Construction/Materials & Technology Division, at (517)322-5709, as soon as they are assigned projects that involve sign support or light standard construction. Steve

If you have any questions concerning this CIM or the information it provides in general, contact Glenn Bukoski, at (517) 335-2243, or Steve Cook, at (517) 332-5709.

Engineer of
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